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LITHOGRAPHIC ABSTRACTS, FEBRUARY 1961

PHOTOGRAPHY, TONE & COLOR CORRECTION

IS YOUR LENS OPTICALLY CENTERED AT SAME SIZE? K. W. Beattie. Modern Lithography 28, No. 10, October 1960, pp. 49,50,163,165 (4 pages). Directions for checking positioning of lens for same size work by first determining positions for 1/2 size and 2 X size. 2 Illustrations.

AGFA LMS PK - A TEST REPORT ON VARIABLE CONTRAST FILM. H. M. Cartwright. The Litho-Printer 3, No. 10, October 1960, pp. 516-518 (3 pages). This new film has emulsions of differing contrast and color sensitivities on two sides of a thin base. Author reports results of tests of the film and points out the advantages which come from having the two emulsions separated by the base, for instance, hypo-ferricyanide reduction can be done on one emulsion without touching the other. Other characteristics in relation to graphic arts useage are pointed out. 2 Graphs, 2 Tables.

PROBLEMS OF COLOUR MATCHING. L. A. Mannheim. The Litho-Printer 3, No. 10, October 1960, pp. 539,41,43,47 (4 pages). Color matching, such as comparison of progressive proofs with original, involve not only the color of the light, but also brightness, viewing conditions, adaptation level and color sensitivity of the eye. Light sources are often standardized by color temperature. That and "Color distribution temperature" are explained. Other factors involved are the immediate surroundings of the picture viewed, the eye of the observer and other factors which are discussed at some length.

ARE SAFELIGHTS EVER 'SAFE'? Frank H. Smith. The Lithographer and Offset Printer 56, No. 10, October 1960, pp. 18-19 (2 pgs.). A report of a series of experiments on the subject employing various safelights including some special filters passing narrow bands of the spectrum. It was found that given sufficient time, fogging results from any combination of film and safelight.

A SIMPLE METHOD OF EVALUATING COLOUR NEGATIVES. George L. Wakefield. The Photographic Journal 100, No. 9, October 1960, pp. 265-267 (3 pages). Method uses a Weston exposure meter to measure transmissions of color negative to the three tricolor filters and aims at selecting the proper correcting filters to arrive at a neutral balance. 6 Illustrations.

AN ELECTRONIC METHOD OF DEVELOPMENT CONTROL. H. B. Archer. TAGA Proceedings, 12th Annual Meeting, June 1960, pp. 29-35 (7 pages). A new means of development control is described. Developed by J. F. Crosfield, of London, England this method has been embodied into a machine called the Gammatron. The means of control depends upon density measurements of the photographic material during development. When the density difference of two control patches reaches a predetermined value, development is automatically stopped by means of an electronic circuit. Degree of development thus becomes independent of temperature, developer activity or emulsion contrast. 8 Diagrams and Charts.

THEORETICAL DETERMINATION OF COLOR ERROR. Irving Pobboravsky. TAGA Proceedings, 12th Annual Meeting, June 1960, pp. 127-149, Discussion pp. 224-225 (25 pages). Existing theory is applied to the evaluation of the reproduction of the basic colorants of three-color duplication systems using (1) monochromatic analysis, and (2) wide band analysis. Actinic densities are predicted from theory and found to be in

excellent agreement with experimental results. The relationship between ENDs and actinic densities is developed, thereby providing a means for expressing the results of a theoretical evaluation of color reproduction systems in terms that have visual significance. The theory is proposed as an analytical tool in determining the effects of the various elements of the reproduction system on color reproduction. This was illustrated by varying the tone reproduction and predicting its effect on color reproduction. 25 Charts and Diagrams, 7 Tables, 8 References.

COLOR DIAGRAMS. Frank Preucil. TAGA Proceedings, 12th Annual Meeting, June 1960, pp. 151-155, Discussion pp. 225-226 (7 pages). Two differently shaped color diagram systems are described which show some graphic arts color problems and variables more effectively or more simply than previous commonly used systems. These are an inverted triangle to predict subtractive color mixtures, and a hexagon to chart both hue and printed color strength variations without the use of equations or mathematics. 6 Diagrams.

SPECTRAL SENSITIVITIES FOR COLOR SEPARATION. J. W. Gosling and J. A. C. Yule. TAGA Proceedings, 12th Annual Meeting, June 1960, pp. 157-170, discussion p. 227 (15 pages). To ensure that colors which look alike shall photograph alike, the spectral sensitivities used in the color-separation stages must conform to a set of visual color-mixture curves. There are an infinite number of sets of visual color-mixture curves, but, in practice, the spectral sensitivities do not usually conform to any one of these sets. It is convenient to be able to specify which set of color-mixture curves most closely approximates a given color-separation procedure so that the seriousness of nonconfirmity may be evaluated and selection of better spectral sensitivities can sometimes thereby be achieved. Neugebauer described a method for doing this in part. This paper extends Neugebauer's methods to encompass all of these aims and demonstrates the procedures involved in many practical situations. 6 Tables, 8 Graphs, 3 References.

*B/W MASK FOR CORRECTING COLOR SEPARATIONS. British Patent 840,407, 2/26/57 - 7/6/60. Miehle-Goss-Dexter, Inc. Ansco Abstracts, Aug., 1960, p. 485. For making the mask a color separation camera is used whose lensboard has been replaced by a panel equipped with a plurality of (e.g. 8) optical assemblies consisting of lens, color filter, shutter with diaphragm and reflecting mirror. However, a single lens camera with multiple sequential exposures could also be used. The mirrors project a superimposed image on the film plane. The necessary positive and negative color corrections are determined by use of a color chart made with the pigments actually used in the reproductions. For making the mask, on panchromatic film, the shutters for the color bands requiring negative correction with the separation in question are opened, while the others remain closed. 9 process and apparatus claims.

PLANOGRAPHIC PRINTING PROCESSES

WEB BREAKING OFTEN? HERE ARE SOME CAUSES. Charles W. Latham. The Inland and American Printer and Lithographer 146, No. 1, October 1960, pp. 74, 164 (2 pages). (In Offset Questions and Answers Section.) Question refers to web breaks on web offset press with hydraulically operated brakes on infeed. Possible causes mentioned are: weak paper, slack in the driving system, blanket packing, worn PIV drives, improperly set tensions, roll brake troubles such as wear in linkage, paper out of condition with pressroom. Suggestion is to eliminate as many causes of tension shock as possible.

WHAT CAUSES WEB PRESS PLATE TO BREAK AT EDGE? Charles W. Latham. The Inland and American Printer and Lithographer 146, No. 1, October 1960, p. 74 (In Offset Questions and Answers Section), 1 page. Question is on plate breakage at front

edge on a blanket-to-blanket press. Possible causes given: 1. Too much pressure between plate and blanket. 2. Soft packing extends beyond lip of plate cylinder. 3. Careless bending of plate in plate bending jig. 4. Ink and dampener rollers set too heavy. 5. Blanket packing. 6. Catch-ups of ink on sides when running narrow web. Each is discussed and remedies suggested.

THEORY ON pH DEVELOPED DURING GEOPHYSICAL YEAR OBSERVANCE. Kurt Helmeg. Modern Lithography 28, No. 10, October 1960, pp. 68, 166, 169 (3 pages). Scumming trouble on a German press run in Buenos Aires using paper made from Finnish pulp started an investigation which revealed the presence of traces of a derivative of Uranium 209 known as "Kreesite." This was affected by cosmic rays, became radioactive and acted to upset the pH of the fountain solution leading to scumming. This has led to research on printing a whole pile of paper simultaneously by penetration of cosmic rays.

WHY WEB OFFSET??? Albert Love. Modern Lithography 28, No. 10, October 1960, pp. 52-54, 165 (4 pages), also Share Your Knowledge Review 42, No. 1, October 1960, pp. 11-14 (4 pages). A story on what Foote & Davies of Atlanta went through in installing web offset. Their preliminary studies indicated the need for enough business for the press. Other steps were to determine what type of equipment, including auxiliaries, were needed. The entire executive staff attended a web press meeting to talk to operators of other web offset presses. The training program, which included the sales department, was a part of the program.

'OFFSET FEVER' HITS WEEKLY NEWSPAPERS. Dorsey Biggs. Modern Lithography 28, No. 10, October 1960, pp. 44-46 (3 pages). An offset newspaper has more eye appeal, more pictures, art, sharpness - for less money. At latest count there were 430 offset newspapers in U. S. Some reasons given include less investment, versatility with contact screen, less cost of illustrations. Costs of converting are discussed. The rate of changeover to offset on the part of small newspapers is said to be 100 per year.

THE NEW KODAK EKTALITH METHOD. Anon. The Small Offset User 9, No. 108, October 1960, p. 421 (1 page). Based on the special camera-speed Ektalith Transfer Paper, process gives economy of paper masters and flexibility of camera copying. Special equipment (illustrated) permits carrying out all operations in room light.

ADVANTAGES SEEN FOR OFFSET PRINTERS USING WEB-SHEET-FEED SYSTEM. Anon. Printing Magazine 84, No. 11, October 1960, pp. 81 (1 page). Advantage is in savings in money. Certain precautions due to possible variation in cut-off length and grain direction are given.

PAPER AND INK

SOME PROBLEMS IN PRINTING BOXBOARD. James H. Wing. TAPPI 43, No. 1, January 1960, pp. 173A-176A (4 pages). Out of a wide range of problems, author chooses the interrelationship of smoothness, impression, and ink to discuss. This is represented graphically as a cube with the space enclosing "good printing" as a truncated cone through this volume. Some of the departures from "good printing" are illustrated with photomicrographs. A plea for more uniform boxboard is offered. 10 Illustrations.

PENETRATION OF VARNISHES AND INKS INTO PAPER UNDER PRESSURE. R. R. Coupe and Baysung Hsu. Journal of the Oil and Colour Chemists' Association 43, No. 10, October 1960, pp. 720-736 (17 pages). The effects of initial film thickness on the transfer of varnish and ink to paper and on their penetration during impression have been studied. Penetration increases with increasing film thickness, but approaches a limiting value which is dependent upon the impression pressure, impression time and viscosity of the

ink. The percentage transfer curve shows a maximum which always precedes the limiting penetration. The discrepancy is attributed to the non-uniformity of the paper surface and pores. A logarithmic normal distribution function seems to represent the penetration curve satisfactorily. In the limiting penegration region the amount of liquid actually penetrating into the paper can be calculated from the transfer data, and appears to have a linear relationship with the fall in reflectance. The amount of liquid required to fill the surface depressions of paper is also determined and is shown to be independent of pressure, time and viscosity. For a paper of very open structure such as antique book paper, there is neither limiting penetration nor maximum transfer. It is believed that, owing to the compression and subsequent recovery of the paper, some pores filled with liquid have spaces in them. It is further suggested that initial penetration occurs in the wide pores, but a subsequent re-distribution of the vehicle may take place among the pores, resulting in the pigments being concentrated in the wide pores and the vehicle in the narrow pores. 7 References, 15 Graphs, Discussion.

PRINTING STUDIES WITH BLACK INKS. J. J. Hammel, J. M. Fetsko, W. D. Schaeffer, and A. C. Zettlemoyer. TAGA Proceedings, 12th Annual Meeting, June 1960, pp. 63-79, Discussion p. 222 (18 pages). The correlation between rheological and printing properties was studied for a systematic series of black inks. The inks consisted of four different carbon black pigments at four loadings in two vehicles. Measurements included viscometer and Inkometer readings; transfer to a coated paper during the letterpress printing of solids; and the uniformity, blackness, and gloss of the prints on the coated and on an uncoated paper. The level of rheological values, the level of transfer and of print quality properties, and the correlations among them depended on the nature of the ink ingredients. The type of paper also affected the correlations. It was concluded that rheological measurements can be used for comparing the relative printing properties of a series of inks only if the inks contain the same ingredients. The agreement of film splitting theories with printing results confirmed the importance of the low shear viscometric nature of inks. 5 Tables, 12 Graphs, 15 References.

MEASUREMENT OF INK AND PRINTING QUALITIES. Otto C. Stoessel, Jr. TAGA Proceedings, 12th Annual Meeting, June 1960, pp. 81-94, Discussion pp. 223-4 (16 pages). A means is presented here to list and measure various qualities necessary to implement statistical quality control relative to lithographic printing. This includes consideration of printing qualities from the viewpoint of the purchaser of printed matter who has the responsibility of quality standards and from the viewpoint of the lithographic printer who must establish and maintain qualities in consideration of the requirements given him. It further takes into consideration two basic categories; measurement of material, i.e., paper, ink and measurement of printed matter, i.e., general process of applying the raw material. 3 Tables.

ELECTRICALLY-CONDUCTIVE AND STATIC-FREE PAPERS. Mason Hayek. TAPPI 43, No. 2, February 1960, pp. 105-112 (8 pages). Organic chemicals have been found which can be used to make paper electrically conductive or to eliminate the static problems widely known in the paper and printing trades. This article briefly reviews the principles of static electrification and describes the mechanism of action of conductive chemicals and the properties of paper treated with these chemicals. A continuous film of conductive agent must cover the cellulose fibers of the paper. Coverage of the surface of the paper is enough for antistatic action, but coverage of the fibers through the bulk of the sheet is essential for conductive treatments. The chemicals function by adsorbing water and reducing the electrical resistance of the paper. The agents can be coated or padded onto paper for conductive effects and, also, can be sprayed for antistatic effects. Several types of conductive chemicals are discussed. The effectiveness of an agent depends upon its concentration, the nature of the paper, and the method

of treatment. 13 References, 9 Illustrations, 7 Tables.

DRYING OF OVERPRINTED INK FILMS. Paul J. Hartsuch. TAGA Proceedings, 12th Annual Meeting, June 1960, pp. 47-54, Discussion pp. 221-222 (10 pages). A recently dried first down (1/D) ink film exerts a powerful catalytic effect on the drying of a second-down or overprinting ink film. As the 1/D ink film ages before being overprinted, its catalytic effect becomes less. Finally it produces an inhibiting action on the drying of the second-down ink. By means of a "sandwich" technique it was possible to prove that the accelerating material from the 1/D dried ink is a vapor. It was found that this accelerating material was not a drier per se so it has been termed a "volatile drying accelerator." By a similar method it was shown that the retarding materials in aged 1/D ink films are not volatile at room temperature but that they can be removed from such films by prolonged heating at elevated temperatures. The effect of changes in pigment, type of varnish, percent of drier in the 1/D ink, and per cent of drier in the overprinting ink were studied in connection with the formation and amount of the volatile drying accelerator and the retarding materials. 5 Diagrams, 5 Tables, 4 References.

CHARACTERISTICS OF PRINTING INK FILMS. T. J. Craig. TAGA Proceedings, 12th Annual Meeting, June 1960, pp. 55-61, Discussion p. 222 (8 pages). The characteristics of the chemical films deposited by the various ink systems in common use are discussed. The three dimensional nature of such films is shown and why some films are harder and more nearly continuous than others. Effect of surface formations of papers are shown by microphotos. 5 Illustrations.

THE "INKATRON" AUTOMATIC INK CONTROL SYSTEM. H. L. Weiss, Tim Bryant, and Ken Morris. TAGA Proceedings, 12th Annual Meeting, June 1960, pp. 195-202, Discussion pp. 218-21 (12 pages). The problem of monitoring and controlling ink film thickness on sheet-fed presses is outlined. A brief history of the problems and the resulting equipment and its application to sheet-fed presses is explained. The Inkatron serves as a continuously operating densitometer which measures ink film density on the printed sheet and automatically adjusts ink flow from the fountain to maintain the color at predetermined standards. The system is far more sensitive than the human eye. In actual production it has been shown that the system can provide automatic ink control through long press runs without visible color variations, sheet to sheet. The control measures ink density at a single control area in each color. Extensive operations in actual production has shown that measurement at a single control point is sufficient for fountain wide adjustment of the ink. By automatically holding the ink to very close tolerance at the control area, color variations across the sheet can be held to a level at which they are invisible to the human eye. Although the Inkatron has been developed with sheet fed offset presses in mind, it is adaptable to all types of sheet fed presses. 4 Diagrams.

HOW TO IMPROVE ROLL CONDITION FOR WEB OFFSET PRINTING. Arden Dubert. Paper Trade Journal 144, No. 41, October 10, 1960, pp. 42-43 (2 pages). Some of the requirements for paper for web offset printing are given and caliper named as a logical starting point for controlling roll condition. Oxford employs a caliper profiler as a means of quality control. An example of how it pinpoints sources of defects is given. 4 Charts.

MAKE 25X40-1000 THE COMMON STANDARD FOR BASIC WEIGHT OF ALL PAPERS. Ernest F. Trotter. Printing Magazine 84, No. 11, October 1960, pp. 56-58 (3 pages). "Standardization promotes efficiency." Older basis weight standards are explained. The 25X40-1000 was proposed during WWII, postponed to avoid confusion. This editorial promotion suggests that if there is enough consumer support, many mills will quickly adopt conversion tables for this new basis weight. It is called MM for 1000 sheets of 1000 sq.in. each.

A LABORATORY INSTRUMENT FOR MEASURING THE PILING PROPENSITY OF PAPERS USED IN OFFSET LITHOGRAPHY. Frank F. Oehme and Donald C. Nepper. TAPPI 43, No. 10, October 1960, pp. 174A,175A,176A (3 pages). A definition for piling is given as it pertains to coated lithographic grades of paper with a distinction being made between piling, tinting, wet pick, and web rub. The conditions which are necessary to produce piling in multicolor offset printing are discussed in relation to the problem of reproducing these conditions in the laboratory for establishing a control test for measuring this property. A detailed description of the development, construction, and operation of an instrument that measures the relative potential of an offset sheet to induce piling is presented as a measure of that sheet's resistance to wet pick. 7 Illustrations - 3 References.

THE EFFECT OF PIGMENT BINDERS ON PAPER GLOSS, PRINTED GLOSS, AND OIL ABSORPTION. TAPPI 43, No. 10, October 1960, pp. 833-836 (4 pages). This report is a study of the interrelationships of paper gloss, printed gloss, and oil absorption as it pertains to the adhesive concentration in paper coatings. The various adhesives studied along with a clay pigment are: (1) hydroxyethylated acidmodified cornstarch, (2) corn white dextrin, and (3) soy protein. These coatings were applied by a KCM roll coater. The results show that printed gloss and oil holdout are improved with increased adhesive concentrations. Maximum printed glosses and oil holdout were reached at 36, 36, and 45% adhesive concentration, respectively (based on a weight ratio of adhesive to 100 parts of pigment) for the hydroxyethylated starch, soy protein, and white dextrin. At higher adhesive concentrations there were no changes in the above properties. The calendered paper glosses were found to decrease at increased adhesive concentrations. Minimum paper glosses were found to exist at the binder levels where the maximum levels of printed gloss were obtained. At higher adhesive concentrations, the calendered paper glosses were found to increase. The above findings are explained in terms of the void volume concept for pigments and by the varying degrees of adhesive bonding. 3 Diagrams, 10 References. (Author - Robert E. Weber)

GUMMED PAPER AND THE LITHO-PRINTER. I. Scott. The Litho-Printer 3, No. 10, October 1960, pp. 529,30,32,34 (4 pages). Gummed paper provides an almost unique collection of printing hazards. The nature of the paper and how this leads to troubles is explained with the aid of line sketches. Gum breaking, the nature of the adhesion achieved and some printing problems are also discussed with the aid of sketches. In spite of the numerous difficulties, much gummed paper is printed, a testimony to printers' skill.

PRINTING INKS UNDER THE FOOD ADDITIVES AMENDMENT. Einar T. Wulfsberg. The American Pressman 70, No. 10, October 1960, pp. 6,8,15,16 (4 pages). A clarification by a Food and Drugs Administration official of some of the meanings of the amendment as they affect printing. Safe substances are listed by categories and the roundabout relationship of the printer pointed out. Several safe approaches are listed.

LITHOGRAPHY - GENERAL

WHICH ARE THE CHANCES OFFSET HAS IN BOOK PRINTING? Anon. Archives for Printing, Paper and Kindred Trades, 3rd Quarter 1960, English Translation pp. 385,86,421 (3 pages). Reasons are given why most book printing is by letterpress and these are discussed at some length in relation to German practice. Some of the disadvantages are pointed out. Progress in offset printing in illustrations, high speed presses, and paper are pointed out in relation to book printing and the disadvantages of letterpress. 2 Illustrations.

REMARKABLE GROWTH IN THE LITHOGRAPHIC INDUSTRY. M. H. Bruno. Share Your Knowledge Review 42, No. 1, October 1960, pp. 15, 47 (2 pages). Report on a talk by the

Research Director of the Lithographic Technical Foundation. Eight current trends of importance in the industry are: 1. Automation. 2. Control. 3. Grainless Plates. 4. Improvements in dampening. 5. Improvements in blankets. 6. Web offset growth. 7. Offset in newspapers and packaging. 8. Improved color. Each of these is discussed.

NEW DEVELOPMENTS AND TRENDS IN LITHOGRAPHY. Michael H. Bruno. TAGA Proceedings, 12th Annual Meeting, June 1960, pp. 203-211, Discussion p. 229 (10 pages). Despite the research that has been done, lithography still has some limitations that can restrict its future growth. These are (1) the variability of the ink-water balance, (2) the need for special characteristics in paper, (3) the use of tacky inks, (4) the possibility of slur in the impression when printing on smooth surfaces, and (5) the overall content of the blanket with the paper in the impression nip. In addition it suffers from the use of poor pigments, the fact that papers are not white, and the graying of halftone tints. Developments in photography, platemaking, press, and paper and ink are helping to eliminate these limitations. Discussed are the use of balanced inks, better plates, the Dahlgren and other dampening systems, a new disposable blanket, ink transfer and tinting studies, and work on the development of a Print Quality Instrument that may eventually lead to automation of quality on the press. 17 References.

SMALL OFFSET PRESSES SUITABLE FOR MAGNETIC INK IMPRINTING. Anon. ODR Reproductions Review 10, No. 10, October 1960, pp. 20-22 (3 pages). This is a case history of how a commercial lithographer uses small offset presses to solve the reproduction problems that attend the printing of checks with magnetic ink. The report should be particularly valuable to in-plant reproduction departments investigating the potentials of magnetic ink. Two A.B. Dick presses are used. 4 Illustrations.

OFFSET ON FOIL - SOME FURTHER NOTES. H. Waters. The Litho-Printer 3, No. 10, October 1960, pp. 545-546 (2 pages). New developments in laminated stocks, coatings and inks make the printer's task easier. Suggestions are offered. Condition the foil to pressroom conditions, handle with lint-free gloves, watch grain direction and curl, use proper inks, run with minimum water. Drying is also discussed.

NEW OFFSET PLANT OF EDITORS PRESS SERVES WASHINGTON, D. C. Anon. The Inland and American Printer and Lithographer 146, No. 1, October 1960, pp. 64,65,66 (3 pages). Story on a new plant owned by Kiplinger Washington Editors. A plant layout is given. Major feature is a new 23 1/2 x 38 1/2 in. 2 on 2 Hess & Barker Web offset press using the Dahlgren dampening system. Two-color and One-color sheet fed presses and other equipment are listed. 5 Illustrations.

CONTROL OF DEVELOPING STAGE IS CRUCIAL IN DEEP-ETCH PLATEMAKING. Charles W. Latham. The Inland and American Printer and Lithographer 146, No. 1, October 1960, pp. 72-74 (3 pages). "Developing the plate is the point in deep-etch platemaking where the quality of previous steps may be evaluated, and to some extent, corrected." Controls such as the LTF Sensitivity Guide And Baume of coating are described. Specific instructions are given. 2 Illustrations.

GRAPHIC ARTS - GENERAL

THE WRAP-AROUND PLATE AND ITS APPLICATION TO THE PRINTING INDUSTRY. E. Bartlett Brooks. A Report to the International Photoengraving Congress, 11th May 1960; Process 67, No. 798, July 1960, pp. 229-231 (3 pages). A list of 10 features and advantages of the plate in effect compare it to both normal letterpress and lithography. One requirement is a negative correct for the process. Other problems of platemaking are pointed out. The duPont Dycril is mentioned. duPont is preparing to supply plate materials in the sizes required.

THE WRAP-AROUND PRESS. James W. Bradley. The Electrotypers & Stereotypers Magazine 46, No. 10, October 1960, pp. 18,20,22,28 (4 pages). A report on a Harris 23 x 30 press after 3 months use. Printing has been on food labels using zinc plates powderless etched from negatives prepared for offset plates. Plates are .025" with .006" to .007" depth which were found preferable to .032" plates etched .009" to .010" deep. The thinner plates conform to the cylinder better.

***ELECTROSTATIC MULTICOLOR PRINTS.** Belgian Patent 576,841, 3/20/58. H. G. Greig, S. W. Johnson and J. P. Lauriello to RCA. Ansco Abstracts, Aug., 1960, p. 486. The process makes use of photoconductive zinc oxide forming 50 - 85% of the developer powder; the residual component is a waxy or resinous coating material of the proper viscosity so that it neither forms too thick a layer on the zinc oxide particles to prevent their discharge by light nor runs out causing a loss of definition. The powder also contains .02 - 1.4% of a sensitizing dye for the zinc oxide and .2 - 12% of coloring matter. The zinc oxide should have a photoconductivity of at least 10^{-9} $ohm^{-1}/watt/cm^2$ when exposed to 390 mμ. Multicolor prints are obtained by exposing an electrostatically charged sheet to a color separation, developing it with a powder of the appropriate color, recharging the fixed print, repeating the exposure using a second color separation and development with a powder of a different shade.

***REVERSED ELECTROSTATIC IMAGES.** Belgian Patent 576,974, 3/28/58. H. Wielicki to RCA. Ansco Abstracts, Aug., 1960, p. 479. In electrostatic photography a direct positive image is obtained by the usual powder development. Reversed images can be obtained by using a developer powder which is triboelectrically positive with regard to silica and grinding it for 3 - 5 h with 1.5 - 9% of colloidal silica of .015 - 5 μ average particle size (Santocel, Cab-O-Sil). In the case of powders for multicolor prints (Belg. 576,841; abstr. 1308/60) 50 - 85% of zinc oxide is mixed with 50 - 15% of thermoplastic material. The mixture is ground, sifted through a 200 mesh sieve and ball-milled with the colloidal silica.

***POLYSTYRENE XEROGRAPHIC DEVELOPER POWDER.** U. S. Patent 2,940,934, 252/62.1, 11/29/57 - 6/14/60. C. F. Carlson to Haloid. Ansco Abstracts, Aug., 1960, p. 479. A developer powder which can be more readily removed from a xerographic plate for its reuse has a particle size preferably of 5 - 10 μ and consists of a finely divided mixture of pigment (5 - 10%) in a polystyrene melting at about 125C (Piccolastic D-125) as nontacky low-melting resin. The polystyrene can be blended with up to 50% of another resin, e.g. polybutyl methacrylate or a Vinylite. For the widely used cascase development the powder is mixed with about 100 pts of a granular carrier, 20 - 100 mesh size, acquiring a charge of opposite polarity when brought into close contact. 12 process and powder claims.

AN ELECTROSTATIC COLOR MAP PRINTER. Donald J. Parker and F. C. Myers. Journal of the SMPTE 69, No. 10, October 1960, pp. 744-748 (5 pages). A feasibility model of an electrostatic color map printer using Electrofax paper has been constructed and demonstrated under a contract with the U. S. Army Engineering Research and Development Laboratories, Fort Belvoir, Va. This machine is designed to print five-color, 22 1/2 by 29-in. maps by optical exposure from 70mm cartographic separations. The feasibility equipment uses liquid color Electrofax development with electronic flash exposure triggered photoelectrically from the paper. The machine is web fed, the paper transport being accomplished by means of air bearings. The Electrofax approach to tactical map reproduction greatly reduces the requirement for storage of large quantities of printed maps. It reduces the logistics problems to supply of raw material. The make-ready time is a few minutes.

*PHOTOCONDUCTOR COMBINATIONS. French Patent 1,221,216, 3/5/58 - 5/31/60. H. Haydn and E. Weyde to Agfa. Ansco Abstracts, Aug., 1960, p. 473. In electrophotographic powder development of large unexposed areas the powder tends to cling more strongly to the borders than to the center of these areas, which results in uneven coverage. By mixing organic or inorganic compounds of lower photosensitivity, of similar or smaller grain size with the photoconductor, between 10 and 100% by weight, this defect can be overcome. An example is a mixture of zinc oxide with zinc sulfide in a silicone resin as binder.

ESTIMATING THE QUALITY OF LETTERPRESS PRINTING PRESSES. A. F. Nielsen. TAGA Proceedings, 12th Annual Meeting, June 1960, pp. 103-126 (24 pages). This report is divided into 2 parts, the first part dealing with methods of measuring which is used today in quality evaluations of letterpress printing presses, and the instruments used for this purpose at the research laboratories of the Graphic College. The measurements include tests on stability, deflections, evenness of the bed, pre-tension and tolerances of the individual elements in the printing press. Furthermore the first part of the report offers a submittance of those points of view we have taken with respect to future testing since, in our opinion, the aim must be a determination of the deformation of the individual parts in the press. The second part is a discussion about the pressures acting during the printing process, especially the influence from the cylinder-diameter. Based on theoretical considerations concerning the linear pressure-distribution a series of printing tests have been carried out. The ink transfer to baryta paper is determined as a function of 2 different pressure-distributions for different types of inks. For the tests a specially constructed strain gauge fitted pressure gauge connected to an oscillograph, a speed-meter, in connection to an oscilloscript and a weighable solid are used. The investigations show first of all that one cannot expect the same splitting constant when printing at 2 different pressure-distributions, but a more thorough acquaintance with other forces acting during the printing (such as tangential forces) would certainly be desirable. An attempt has been carried out to detect a relationship between the ratio of the initially absorbed ink-volumes in the paper and the paper and the different conditions of printing. 15 Diagrams and Illustrations. 8 References.

THE ART COLOR HARD DOT PROCESS. H. M. Cartwright. Process 67, No. 800, September 1960, pp. 297-299 (3 pages). This is a double positive process using a screen positive and a continuous-tone positive for printing in register on carbon tissue. The technique involved and the stages of the process are described. It is intended for color work, should serve for monochrome, and is subject to the usual shortcomings of gravure in reproducing line or text. 2 Illustrations, 3 References.

LAB ATTEMPTS TO CORRELATE TEST METHODS. Anon. ANPA Research Institute Inc. R.I Bulletin No. 157, June 10, 1960, p. 21 (Complete article given here). One offshoot of the newsprint quality control program at the Research Center is a move to correlate different testing methods. Determining the relative printability of various newsprints has occupied the Center for a number of years. This required a suitable printability test to provide statistics acceptable to all concerned. The Larocque printability test, devised by Dr. Gerard Larocque, of the New York News, met the requirements of the Research Center, although its validity has been questioned by some. Because of this, the Center instituted a program designed to show whether proof press testing results could be compared statistically with the results of production press printing on its Hoe Printmaster, through evaluation by a group of observers. Analysis of both results gives a correlation coefficient that indicates whether observers of both press products agree. Under a variety of conditions, studies have been made of solids, halftones and a screened tint. Variations in newsprint, inking levels, paper side (felt and wire), and the products of both newspaper press and proof press have been evaluated.

FUNDAMENTALS OF SINGLE-SOLUTION ETCHING IN GRAVURE. James M. Dugan. TAGA Proceedings, 12th Annual Meeting, June 1960, pp. 19-28, Discussion p. 215 (11 pages); also Gravure, Volume 6, No. 7, July 1960, pp. 20-22,52-3 (5 pages). One of the time-consuming, variation-causing aspects of preparing gravure cylinders is the use of several etching solutions of various densities. It is doubtful that a carefully controlled, mechanical or automatic etching operation could be designed around the use of this many-solution etching process. However, research has shown that the number of etching solutions can be reduced to one and that a time-scale can be established to perform the etching step in the preparation of gravure cylinders. This improvement is based on research that developed methods for, (1) careful control of the dichromate sensitizing of the light-sensitive paper, (2) new light exposures that modify screen and continuous-tone exposures, (3) control of the effect of varying composition of the etchant on the resist, and (4) adaptation of the particular type of dot process that is used. Data for exposures of the sensitive film related to curves for results in terms of positive density and print density show that the procedure must be varied with each type of process. Further development of the techniques that are explained could lead to electronic control of cylinder preparation. 4 Diagrams, 3 Tables, 1 Reference.

AUTOMATIC ELECTRONIC PROOFREADER. E. R. Kramer and J. B. O'Maley. TAGA Proceedings, 12th Annual Meeting, June 1960, pp. 185-191, Discussion p. 215 (8 pages). This paper pertains to an automatic electronic proofreading system for "proofreading" that punched tape which operates automatic typesetting equipment. Errors are sensed by comparing the character codes on the punched tape with the characters on a typewritten draft.

"DYCRIL" PHOTOPOLYMER PRINTING PLATES. Harry E. Crawford. TAGA Proceedings, 12th Annual Meeting, June 1960, pp. 193-193G & 193, Discussion pp. 216-8 (12 pages). The DuPont Company recently announced plans to commercialize "Dycril" Photopolymer Printing Plates, a step that represents more than ten years of research and development by teams of scientists and technicians. The technical background leading to this new product is of special interest to the various craftsmen in the graphic arts. The chemistry of photopolymerization, optics of three dimensional image formation, photomechanical photography and equipment engineering are among the specialized subjects to be discussed. The "Dycril" plate consists of a thin layer of photo-sensitive plastic bonded to a metal support. To produce a printing relief image, a high contrast negative is placed in contact with the plastic surface and exposed to ultraviolet radiation. The areas shielded by opaque portions of the negative are washed away easily, leaving the exposed areas in relief. Details of each process step will be explained with emphasis on chemical and photographic aspects. Photopolymer plates have been used in all major segments of the printing industry, including dry offset and high-speed rotary wrap-around applications. Particular emphasis will be placed on press mounting and plate performance. Recent findings in the area of plate repair will also be disclosed. 6 Illustrations.

PRINTER'S ASTHMA. W. Schweisheimer, M. D. Printing Monthly 12, No. 7, October 1960, p. 9 (1 page). Spray fluids are one cause of asthma in printers. Some of the gums used which cause asthma are mentioned and substitutes and remedies suggested.

EUROPEAN APPROACH TO PRINTABILITY RESEARCH. Marvin C. Rogers. TAPPI 43, No. 10, October 1960, pp. 32A,34A,36A (3 pages). Author first points out a fundamental difference between American and European graphic arts research in that government enters into European, not into American. As a result, more fundamental study is possible in the European graphic arts research centers. Several European centers are touched on briefly and their work on printability mentioned.

THE NEBULOUS NIP. R.D.W. Miller. PATRA Journal 1, No. 3, October 1960, pp. 10, 11,14 (3 pages). A brief report on work being done on a study of rolling contact between relatively rigid and elastic surfaced cylinders. Differences in speed of rotation were found, depending on the elastic material used and the pressure. 4 Illustrations.

PLEASE DON'T TRIM THE DAISIES . . . Lester M. Reiss. Modern Lithography 28, No. 10, October 1960, pp. 60,61,165,166 (4 pages). From an address presented at the 41st annual convention, International Assoc. of Printing House Craftsmen, August 1960. New developments in cutting give better quality work and eliminate back-breaking procedures. Some of the improvements include hydraulic clamp action, air film table, automatic spacer cutters, three (also four and five) knife trimmers. Advances in collating and gathering are mentioned. Four suggestions on plant modernization are offered.

THE BMI-HUNT SURVEY. Anon. Book Production, October 1960, pp. 52-53 (2 pages). A report of a forecasting survey of book sales by 1965. Charts are given showing past production and projections to 1965. The survey is broken down into a number of categories by contents, bindings, etc. Projected increases for 1965 over 1958-9 range from 8% to 93%. 7 Charts.

AUTOMATION IN PRINTING. Anon. The British Printer 73, No. 10, October 1960, pp. 96-103 (8 pages). Examples cited are: feeders, improved photographic methods, 2 and 4 color presses, bindery, mechanical typesetting machines, web controls, in-line carton production. The bindery is cited as place for advances in materials handling. Needs for the future are in handsetting and make-up. Plate and cylinder making, paper handling and transport. Automation is expected to affect spoilage rate and reduce costs, not likely to improve quality, may lead to a decline in craftsmanship. 2 Illustrations.